# Symptom Burden in Rheumatoid Arthritis: Impact on Physical, Psychological, and Social Well-Being—A Narrative Review

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***Abstract*—Rheumatoid arthritis (RA) is a chronic autoimmune disease marked by persistent synovial inflammation, joint destruction, and extra-articular symptoms. This disease imposes a heavy symptom burden, affecting patients' physical function, psychological well-being, social participation, and overall quality of life. RA causes psychological distress and impaired health status, leading to depression, anxiety, and sleep disturbance. It is also linked to comorbidities such as cardiovascular, pulmonary, metabolic, and gastrointestinal conditions, which increase morbidity and mortality. This narrative review examines the multidimensional symptom burden in RA. A structured search of PubMed, Scopus, and Google Scholar was conducted using relevant keywords. Key domains explored include pain, fatigue, disability, emotional distress, sleep disturbance, and systemic complications. Understanding the interplay between inflammation, symptom severity, and quality of life is essential for patient-centered care. A holistic, multidisciplinary approach, including pharmacological treatment, rehabilitation, psychological support, and social interventions, is crucial to reduce symptom burden and improve outcomes in those with RA.**

***Index Terms*—chronic inflammation, fatigue, functional disability, quality of life, rheumatoid arthritis, symptom burden**

## I. INTRODUCTION

Rheumatoid arthritis (RA) is a persistent autoimmune inflammatory disease that impacts almost 0.5% to 1% of the population.[1] It affects more women than men, with a ratio of 3 to 1.[2] In 2019, around 18 million individuals were diagnosed with RA globally, of whom 70% were women and 55% were 55 years or older. Moderate to severe symptoms are noted in around 13 million people with RA, primarily affecting joints such as hands, wrists, feet, ankles, knees, shoulders, and elbows.[3] The effect is reduced joint mobility, impairments in physical function, decreased quality of life, and overall functional capacity.[4] RA, if not treated, can lead to ongoing joint damage, deformity, chronic pain, long-term disability, and potentially shortened lifespan. Apart from joint involvement, RA patients may also experience muscle dysfunction and an increased risk of multiorgan complications.[3] Rheumatoid arthritis (RA) poses significant clinical challenges as it is currently without a cure and places considerable strain on both individuals and society. In addition to direct healthcare expenses, RA imposes socioeconomic burdens on patients due to reduced work capacity, functional limitations, and decreased engagement in social activities.[5]

## II. METHODOLOGY

This narrative review was conducted using a structured literature search approach. Electronic databases, including PubMed, Scopus, and Google Scholar, were searched for relevant articles published between 2013 and 2024. Keywords used included "rheumatoid arthritis," "symptom burden," "fatigue," "pain," "quality of life," and "psychological impact." Inclusion criteria comprised peer-reviewed articles, systematic reviews, and observational studies focusing on symptom burden in RA. Exclusion criteria included case reports, editorials, and studies not published in English. The selection of studies was based on relevance to the topic and critical appraisal of study quality

## III. CONCEPTUAL FRAMEWORK OF SYMPTOM BURDEN IN RA

The symptom burden in rheumatoid arthritis can be understood as a multidimensional construct where chronic inflammation acts as a central driver leading to pain, fatigue, and psychological distress. These factors interact to produce functional disability and reduced quality of life. Social limitations and comorbidities further exacerbate this burden, creating a cyclical pattern that negatively impacts overall well-being.

## IV. FACTORS INFLUENCING THE SYMPTOM BURDEN OF RHEUMATOID ARTHRITIS PATIENTS

### A. Chronic pain and joint stiffness

Rheumatoid arthritis (RA) is characterized by systemic symptoms including pain, swelling, and stiffness in multiple joints. Distinctive symptoms of RA involve morning stiffness, polyarticular pain, swelling, malaise, fatigue, and occasional fever. Patients experience difficulty moving their fingers upon awakening, often described as difficulty forming a fist. Symptoms of the joints, such as arthralgia, are associated with swelling and limited mobility, primarily affecting fingers (proximal interphalangeal, metacarpophalangeal), toes (metatarsophalangeal), knees, feet, hands, elbows, and cervical spine. RA may involve multi-organ complications like joint destruction. It advances swiftly post-onset, leading to irreversible physical dysfunction and deformity in affected joints. Early diagnosis and treatment are crucial to prevent irreversible joint damage.[6]

Pain is a significant concern for individuals with RA, greatly impacting their quality of life and posing a threat to psychological well-being. There is persistent inflammation causing structural damage in joints. Limitation in joint mobility is a hallmark of the disease.[7] In a study, 575 patients with clinically suspected arthralgia (CSA) were recruited, 34% of them experienced morning stiffness, showing higher rates of subclinical joint inflammation, specifically synovitis and tenosynovitis, and elevated C-reactive protein (CRP) levels compared to those without morning stiffness.[8] There is also involvement of neuroendocrine responses that amplify cytokine release and hyperalgesia. Non-inflammatory factors and central sensitization mechanisms contribute to persistent pain, often present even in remission. Fibromyalgia syndrome (FMS) is widespread among RA patients and can exacerbate pain, influenced by factors such as depression and pro-inflammatory cytokines. [9]

### B. Fatigue and reduced physical function

Fatigue is recurrently reported among patients with rheumatic diseases and is described as a subjective sensation of tiredness that develops gradually. Fatigue is reported in 40-80% of RA patients. It can manifest as physical fatigue impairing physical performance, or mental fatigue affecting cognitive abilities. A higher prevalence of fatigue is seen in people with RA compared to the general population.[10] Physical functioning is influenced by inflammation and structural damage, as evident by disease activity and duration.[11] Fatigue and functional limitations are common and closely linked to disease activity and severity. Joint stiffness, swelling, and deformities restrict tasks that involve the hands, wrists, and feet, such as dressing, eating, gripping objects, and walking. These challenges reduce the quality of life and physical function for individuals with RA.[10] A study conducted with two UK cohorts revealed that more than 80% of individuals with RA experienced clinically significant fatigue, as indicated by a Visual Analogue Scale (VAS) score of 20 mm or higher. Additionally, over 50% of these individuals reported high levels of fatigue, with VAS scores of 50 mm or more.[12] Fatigue in RA is more than just physical exhaustion; it includes feelings of weariness, drowsiness, irritability, and cognitive difficulties. Unlike normal exhaustion that improves with rest, RA-related fatigue persists regardless of rest. It is a common extra-articular symptom affecting a significant majority of RA patients. Various factors, such as social variables, gender, cognitive and emotional factors, sleep disturbances, pain, and environmental influences, contribute to the onset and severity of fatigue in RA.[13]

### C. Impact on daily activities and quality of life

RA has an impact on the physical, psychological, and social dimensions of patients' lives.[11] It significantly reduces quality of life, influenced by personal beliefs,

loss of independence, and declining physical health, compared with healthy individuals. The disease restricts daily activities, affects mood and social interactions, and causes varied physical and emotional challenges. Nearly 43% of the 50 million adults diagnosed with arthritis reported an inability to perform usual activities. In a study, 31% of working-age adults also reported such limitations. Approximately 40% of adults with RA found it very difficult or impossible to perform at least one of the following nine activities of daily living (ADL): stooping, bending, or kneeling; standing for more than 2 hours; walking a quarter of a mile; pushing a heavy object; climbing a flight of stairs; lifting or carrying 10 pounds; sitting for more than 2 hours; reaching above their head; and grasping small objects.[14]

D. Emotional and psychological distress

Adverse perceptions of their illness are linked to poorer patient-reported outcomes, reduced quality of life, and lower adherence to treatment regimens in RA patients.[15.] Depression is a notable comorbidity that exacerbates disability and reduces the quality of life in RA patients.[16] A study compared the health-related quality of life (HRQoL) among patients with rheumatoid arthritis (RA), psoriatic arthritis (PsA), and spondyloarthritis (SpA) using data from 490 RA, 198 PsA, and 119 SpA patients. Quality of life was assessed using the Short-Form 36 Health Survey, alongside measures of disease activity (DAS28-CRP, DAPSA, ASDAS-CRP), and psychological factors (depression and anxiety). Results showed that RA patients generally had worse scores in physical functioning, role limitations due to physical health, and physical component scores compared to SpA patients. [11]

E. Comorbid conditions and complications

Several other medical conditions, including asthma, chronic pain, fibromyalgia, migraine headaches, cardiovascular disease (CVD), and related risk factors such as hypertension, hypercholesterolemia, and diabetes, are prevalent in RA patients. These co-occurring conditions contribute to the complexity and health burden experienced by individuals with RA.[17] RA greatly elevates the risk of cardiovascular disease (CVD), leading to increased morbidity and mortality among patients.[1] Epidemiological studies have shown that patients with RA are at a 1.5–2.0 times higher risk of developing coronary artery disease (CAD).[18] The chronic inflammation in RA accelerates atherosclerosis, resulting in a higher likelihood of myocardial infarction, stroke, and other cardiovascular incidents.[1] RA affects multiple organs, including the lungs, contributing to mortality, accounting for up to 20% of deaths in RA patients. Subpleural airway disease (SAD) appears to be the most common form of pulmonary involvement in RA.[7] There is susceptibility to malnutrition due to both disease-related factors and the impact of treatments.[19] Metabolic syndrome (MetS) can also be noted, like insulin resistance (IR), central obesity, dyslipidemia, and hypertension, caused by inflammation and disease activity. MetS is strongly linked to accelerated atherosclerosis and increased cardiovascular disease (CVD) risk, reflecting its pathogenic role in CVD development. IR is a core component of MetS in RA and is influenced by elevated levels of inflammatory markers such as IL-6, TNF-a, CRP, and ESR, exacerbating systemic inflammation and endothelial dysfunction.[20] A high prevalence of psychiatric disorders exists such as depression, anxiety, and posttraumatic stress disorder (PTSD). These conditions, along with extra-articular manifestations and comorbidities, are associated with increased functional disability, reduced quality of life, and higher mortality rates among RA patients. [17]

F. Sleep disturbances

86.5% of RA patients experience poor sleep quality, associated with depression. Poor sleep and depression are closely intertwined. These conditions persist across various levels of disease activity in RA.[19] Sleep disturbances significantly impact health-related quality of life (HRQoL). Common sleep issues include reduced total sleep time, frequent waking periods after sleep onset, and increased nonrestorative sleep showing a decline in HRQoL.[20] Around 50-75% of RA patients experience poor sleep quality and reduced total sleep time. Insomnia affects more than half of all RA patients. Research suggests worsening disease activity correlates with an increased prevalence of sleep disorders. Integrating routine assessment of sleep quality and mood into standard care protocols for RA patients is crucial, as addressing these factors can significantly improve overall patient well-being and quality of life.[21]

Further research, including clinical trials, is necessary to expound the precise role of sleep disturbances in the onset and progression of RA, considering factors like disease activity and immune function.[22]

G. Functional disability and work limitations

Painful inflammation gives rise to severe joint damage and disability in RA.[17] Pain, along with inflammatory markers and disease activity levels, emerges as the primary factor influencing disability in 25% of RA patients, where older patients and women are more significantly affected. Functional disability is influenced by demographic factors, disease-related symptoms such as pain and swollen joints, and comorbid conditions like depression and diabetes. Patients with extra-articular manifestations and comorbidities tend to experience worse functional capacity. Therefore, comprehensive management strategies that include both disease control and psychological support are essential in managing RA-related disability effectively. Early diagnosis and timely initiation of treatment are crucial to mitigate the disease's impact on functional abilities.[16]

H. Role of inflammation in symptom severity

RA causes inflammation of the synovial joint, commonly starting in the hands and feet, impacting daily life due to pain, joint deformities, and its progressive nature. Elevated inflammation levels correlate with fatigue and hindrance in work, leisure activities, and social responsibilities.[3] Pain can stem from inflammation and trigger neuroendocrine responses involving substances like substance P and calcitonin-gene-related peptides. Various cytokines like IFNγ, GM-CSF, IL-4, IL-10, IL-13, and IL-17 are involved in both pain regulation and inflammation. These cytokines interact with the JAK-STAT pathway, transmitting pain signals and modulating the central nervous system. These responses can initiate neurogenic inflammation and enhance cytokine release, including interleukin-6 (IL-6) and tumour necrosis factor-alpha (TNFα), which sensitizes sensory neurons and leads to persistent hyperalgesia. TNFα acts on receptors in dorsal root ganglions (DRG) and throughout the central nervous system (CNS), promoting synaptic changes and pain induction. IL-6, aside from its inflammatory role, affects neurons and glial cells, influencing pain perception and neuronal function.[9] Rheumatoid factor (RF) auto-antibodies are produced by the inflamed synovium in rheumatoid arthritis (RA) and interact with the Fc region of IgG antibodies. RF, particularly high-affinity types found in synovial fluid, plays a pathogenic role by inducing immune complex formation, complement activation, and leukocyte infiltration at inflammatory sites. RF isotypes, starting with IgM and progressing to IgA and IgG, can be detected years before RA onset. A high RF titer indicates poor prognosis, increased disease severity, reduced remission rates, and higher risks of extra-articular manifestations, morbidity, and mortality. RF serology, particularly using assays like CCP2 ELISA for citrullinated peptides, is crucial in clinical practice for early disease identification and determining appropriate therapy strategies.[23]

## V. RESEARCH GAPS

Despite extensive research, gaps remain in understanding the integrated management of symptom burden in RA. Limited studies focus on holistic interventions addressing physical, psychological, and social dimensions simultaneously. Additionally, there is a lack of research in diverse populations, particularly in developing countries.

## VI. CLINICAL IMPLICATIONS

A multidisciplinary approach is essential for effective management of RA. Healthcare providers should incorporate physical, psychological, and social interventions to improve patient outcomes. Routine assessment of symptom burden, including fatigue and mental health, is recommended.

## VII. CONCLUSION

Rheumatoid arthritis remains a complex and debilitating chronic autoimmune disease with far-reaching effects on physical functioning, emotional well-being, and socioeconomic participation. Its unpredictable and progressive nature necessitates a comprehensive management approach that extends beyond symptom control alone. Early diagnosis, timely initiation of effective anti-inflammatory therapy, and continuous monitoring are essential to prevent joint damage and limit disease progression.

In addition, addressing psychological distress, functional limitations, and social challenges is critical to improve overall quality of life. A multidisciplinary, patient-centred model of care incorporating pharmacological treatment, physical rehabilitation, psychological support, and social interventions is vital in optimizing long-term outcomes. Greater emphasis on holistic care and patient empowerment may substantially reduce the overall burden of rheumatoid arthritis and enhance the well-being of individuals living with this condition.

## VIII. DECLARATIONS

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